Geological Survey of Newfoundland

REPORT

ON

The Mineral Statistics of the Island

By

JAMES P. HOWLEY, F.G.S.

for the Year 1901

ST. JOHN'S, N.F.
Robinson & Company, Limited, Press
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St. John's,
February 20th, 1902.

ELI DAWE, Esq.,
Minister of Agriculture and Mines.

SIR,—With the commencement of the new century, Newfoundland has made a good beginning in the development of her mineral resources.

For a country possessing so small a population, a mere modicum of whom are engaged in this industry, her showing for the year 1901, as may be seen by the following figures, will bear favorable comparison with many more thoroughly developed and well established mineral regions.

It was predicted in my last report that the value of the coming year's mineral products would probably greatly exceed that of any preceding year, which prediction has been amply fulfilled.

The total value of the output for the year 1901, of the crude materials at the mines and quarries, amounted to the handsome sum of $1,211,163, being in excess of that of 1900 by $419,154.

The chief factor in bringing about the above result has been the large production of iron ore at the Bell Island mines, which reached a total of 738,206 tons, which, estimated at the same number of dollars only fell short of the entire value of the preceding year's mineral output by $53,893.

There has also been an increase in the production of copper ore. Tilt Cove alone shipped 74,808 tons as against 66,959 tons in 1900. From Little Bay and Colchester mines, there were shipped 440 tons, and from Blo-mi-down mine, York Harbor, 100 tons, bringing the total up to 75,348 tons. So far from the copper production decreasing, it will be seen by reference to former reports that at no time in the history of the enterprise has this large output been exceeded, except in 1899, when it reached [illegible]6,957 tons. This was, however, due to the holding over of reserves from former years to await the anticipated rise in the price of copper.

The re-opening of the Pilley's Island pyrites mine by the Newfoundland Exploration Syndicate proves conclusively that this latter mine is by no means exhausted. Mr. C. F. Taylor informs me that new ore bodies have been struck, and a diamond drill is now at work proving them. About 150 men are at work during the winter taking out ore, and it is expected that two or three cargoes will be ready for shipment in the spring. One small cargo of pyrites was exported during the season from Little Bay Mine.

The large deposit of pyrites near Ramah, Labrador, mentioned in last year's report, has, I understand, been tested during the summer. The ore is said to be of excellent quality, averaging about 50 per cent. in sulphur, and the mineral band is reported to be of great extent. The principal drawback to successful mining would appear to be the shortness of the shipping season, owing to the presence of floe-ice up to so late a period in summer.

Another pyrites deposit, from which some fine specimens were procured, is situated on an island in St. John's Bay, west coast of Newfoundland, but no development sufficient to determine the prospective value has as yet taken place.

It is pleasing to be in a position to record the fact that other mineral products, not hitherto looked upon as of much importance, are beginning to attract attention, and in some cases the activity and enterprise displayed in exploiting them is reaping a deserved reward. This is particularly noticeable in the manufacture of brick and slate. There are now four brickyards in operation in Smith's and Random Sounds, the combined output from which the last year reached 1,305,000, being an increase of 505,000 over the production of 1900.

The operations at the Wilton Grove slate quarry in Smith's Sound were actively prosecuted during the year, resulting in a large increase in the manufacture and exportation of roofing slate. The output was about 2,000 tons, equal to 6,000 squares, valued at $22,500. The slate is made in two sizes, 29x10 and 24x12. It was all shipped to the English market, the former to Newcastle, the latter to London, where a ready sale at remunerative prices was obtained for it. This quarry is now a well established industry. I paid it a visit last autumn, and was surprised at the work being accomplished.

A fine pier was in course of construction along the water front, being filled in with the waste from the slate. Vessels of almost any size could lie alongside within a stone's throw of the quarry, and in perfect safety. A large space immediately in the rear is used for storage purposes, where a splendid display of slate lay piled in tiers awaiting shipment. About 50 men were busily engaged with Ingersol steam-drills quarrying huge slabs from the cliff. These were swung by derricks on to trollies in waiting, and quickly removed to the sheds, where a number of Welsh slaters were busy cleaving and dressing the material into the required dimensions for roofing purposes.

So far, no attempt has been made to manufacture any of the other articles for which this slate is equally well adapted, but I understand the plant requisite for such purposes is soon to be installed.

The slate is of various shades of colour, dark purple prevailing, but there is also a band of pale sea-green of beautiful texture. The quarry is of immense proportions, and there is sufficient material in sight to last for generations.

Several new deposits have been located within the past season, similar in geological age to that of the Smith's Sound quarry. Some of the large Welsh firms are beginning to take an interest in the possibilities of this country as a slate producer, little, if anything inferior to their own. One of those firms informs me that our slate is much superior to any imported into Great Britain from foreign countries. They add that "there is a great future for slate in Newfoundland."

Few people are aware what a gigantic industry the manufacture of slate is in the United Kingdom. In 1900 the total quantity produced in the British Islands was 585,859 tons, valued at the immense sum of £1,528,336 stg., or equal to about $7[illegible]6,613 of our money. Of this large production all but £147,800 worth was used within the kingdom itself besides which there was a large importation.

In the matter of structural material, such as building stone, granite, etc., it is pleasing to note that the superiority of native stone is beginning to assert itself. During the past season a marked increase is manifest in the quantity quarried and utilized in the several public and other structures in course of erection. The new

Court House is being entirely constructed of sandstone from Kelley's Island, Conception Bay, faced with syenite from Mr. Ellis' quarry near Petites, South Coast. These form an excellent contrast, and their durable character is unquestionable.

A more than usually large quantity of the Signal Hill stone was utilized the past season, owing to the construction of the new wing to the Lunatic Asylum creating an extra demand for it.

Reliable statistics of the amount and value of the annual production of this latter stone are difficult to obtain, and the figures given can only be considered as approximate. The industry is conducted by a number of individuals, chiefly farmers, who utilize their slack time in quarrying the stone for sale when in demand. The total sum realized each season must in the aggregate be quite considerable.

The Reid Newfoundland Company vigorously prosecuted work at their granite quarry near the Topsails during the greater part of the summer. Much of the material raised was utilized in bridge construction, and a large amount was dressed for the new station to be erected at Riverhead. They also manufactured 140,000 passing blocks for the laying down of Water Street.

As there is an abundant supply of admirable building material in endless variety, readily obtainable in many parts of the island, we are not likely to witness such importations of foreign stone as formerly in the future.

It is to be regretted that the result of the boring operations at Parsons' Pond for petroleum have not proved as successful as was anticipated. The Company prosecuting these tests have gone to great expense, and are deserving of better success. Their effort to prove the existence of oil in economic quantity in that region might well form the subject of assistance from the public funds. The establishing beyond question of an oil region in that locality would mean much for that industry in the island, whereas a discontinuance of the attempt at this juncture, though by no means to be looked upon as a complete failure, may have the effect of discouraging further operations, and thereby leave it to be inferred that petroleum is not to be reckoned as amongst the possible resources of the country. I do not think this would be a justifiable conclusion to arrive at in view of the results already attained.

I have been unable to obtain any information relative to the drilling operations carried on in Port-a-Port Bay, but presume these also have not come up to expectation.

That petroleum exists in both localities has been amply demonstrated, and I feel warranted in expressing the belief that persistent effort will yet be attended with success.

When it is remembered that in Canada many holes annually drilled prove unproductive, and while there are now some 10,000 wells yielding oil, they are all pumping wells, only averaging about one-quarter of a barrel each, daily, I do not see any reason to lose hope.

I am again indebted to the managers of the various mines in operation for their courtesy in supplying the necessary information to enable me to compile these statistics. I have also to thank the following gentlemen for information relative to the minor industries coming under the same head, viz.: Messrs. Job Brothers and Davey Brothers, George Pilley, Smith Brothers, and James Pittman, relative to brick manufacture; Harvey & Co. and Mr. Willis, *re* slate; the Reid Newfoundland Company, Wm. Ellis, Kennedy Brothers and J. Ledrew, *re* building stone; J. Score, *re* lime; to Mr. H. LeMessurier, Assistant Collector of Customs, for returns from his Department, and other parties from whom various items of information were obtained.

The following tables, which present the chief features of the mineral industry during the year, will, I trust, afford some useful and interesting facts in regard to this growing and important industry, showing its rapid growth and present condition.

TABLE I.

Mineral Production of Newfoundland for the Calendar Year, 1901.

Product	Quantity Raised	Manu'factrd or used in country	Exported to what Market.	Value at Mine, $
Brick	1,305,000	1,305,000		13,050
Building Stone.	5,000 ts.	5,000 ts		5,000
Cobble "	500 "	500 "		500
Copper ore	75,348 "		36,641 to Gt. Britain 35,167 to New York 540 to Pictou, N.S.	360,094
Granite	3,240 ts.	3,240 "		19,710
Iron ore	738,206 "		35,830 to Gt. Britain 213,335 to Germany 408,617 to Canada 76,860 to U. States	738,206
Limestone	1,300 "	7,800 "		975
Paving Stone		140,000 bl.		14,128
Pyrite	7,532 ts.		7,532 to New York	37,128
Slate	2,000 "	6,000 sq.	6,000 to Gt. Britain	22,500

Total Value, $1,211,163

TABLE II.

Showing Increase and Decrease in 1901 *as Compared with* 1900.

PRODUCT	QUANTITY		VALUE	
	Increase	Decrease	Increase	Decrease
Brick	305,000		1,850	
Building Stone.	4,500 ts.		4,500	
Copper ore	4,734 "			39,681
Granite	2,615 "		17,210	
Iron ore	417,743 "		417,743	
Lime	7,800 bls.		975	
Paving Stone	140,000 bks		14,000	
Pyrite	7,532 ts.		37,128	
Slate	1,400 "		11,700	

The above tables are based upon the very most reliable information that is obtainable as to the quantities and value of the raw materials exported from, or made use of in, the country. It will be seen that they indicate an increased output all around. In the case of copper ore only, although the amount shipped was in excess of that of the previous year, there was a slight falling off in the value. This was owing to a depreciation in the price of metallic copper during the year; nevertheless, the output exceeded that of any season since the initiation of copper mining in the country, with the single exception of that of 1899, when it reached the large figure of 86,957 tons. In the latter year copper had attained to an abnormally high price; and to obtain the benefit of this, all reserves of ore held over were sent to market.

An analysis of the figures now presented indicates a condition of this important industry with which all interested in the country's welfare must feel pleased. It shows an increase in value over the preceding year of 52.9 per cent., a result unequalled by any other of the country's industrial pursuits.

If we assume the present population of the island to be about 200,000, the per capita value would be $6.05. In 1891, when the last decennial census was taken, it only amounted to $3.19 per head of the population, showing that it has more than doubled in the interim. Assuming again, that the actual number of persons engaged in mining last year was about 2,000, the figures represent an earning power of $605.10 per head, which is far in excess of any other source of employment the country affords, not excepting the great fisheries. The annual outcome of this, the country's staple resource, is, in round numbers, about $8,000,000. There are about 10,000 persons engaged in prosecuting the industry, consequently, their earning power represents about $200 per head, and apparently the fisheries are at a standstill.

It will be thus seen that mining, though as yet only in its initial stage, as it were, is destined to outstrip all the other industrial pursuits of the island in course of time. What might it not have been to-day, had it been in existence since the earliest settlement, or had it received a similar measure of attention and encouragement to that bestowed upon the fisheries no person can form the least idea, nor yet what it may arrie vat a half a century hence.

In the comparative table, No. III., the estimates are based, as formerly, upon the metallic contents of the ores, where these could be ascertained, and the selling price of the same in the principle markets of the world. This is the final value of the country's mineral products when reduced to the metallic state, but does not take into account the cost of mining, freight, smelting charges, etc., none of which are within my reach.

This table is intended to show in the first place: the rapid growth of the industry within recent years; and in the second: what might be the result could the manufacture of these ores be carried out in the country itself. There was a time when our copper ores were smelted here, producing a high-grade regulus, and afterwards ingot copper; but, for some unknown reason, the attempt was subsequently abandoned. It is to be regretted that some steps were not taken to ensure a continuance of this enterprise in our midst.

It appears to me there is an opening here for a great smelting industry at some central point in Notre Dame Bay; more especially if the coal seams near Grand Lake were utilized for the purpose. Many small copper deposits, not sufficiently extensive in themselves to warrant mining on a large scale, could be made to pay handsomely were a ready market for the raw ore available in their immediate vicinity.

I have frequently adverted to this subject before, and as I am a firm believer in its practicability, perhaps a repetition may lead in the end to attracting the attention of capitalists to what I conceive to be an enterprise holding out much promise of profitable investment.

OUR IRON ORE INDUSTRY.

The enormous growth in the iron and steel industry of late

mother country, then must Newfoundland's opportunity
Most certainly, no colony under the British flag holds a supe
position in this respect.

Our Ore Industry.

The enormous growth in the iron and steel industry of late

TABL

Table of comparative values of the Mineral Products for the past
prices of the metal, this being the final value of the reduced
price in the local and foreign markets.

PRODUCT.	1897		1898	
	Quantity	Value.	Quantity	Value.
Brick	870,000 M	$ 7,570	870,000 M	$ 7,570
Building Stone	500 t	500	600 t	900
Chromite	3,035 t	42,462	724 t	15,457
Coal	....	....	2,900 t	11,600
Cobble Stone	....	500 ?	....	500 ?
Copper	2,518¾ t	690,384	2,407½ t	656.741
Gold	3,000 oz	62,010	2,783 oz	57,525
Granite	120 t	1,008	4,000 t	20,000
Iron	30,786¼ t	347,409	55,000 t	712,200
Lime	....	....	....	....
Manganese	1,500 t	18,000	....	....
Mica	....	....	....	....
Paving Stone	....	....	1,700 t	13,600
Pyrite	32,790 t	229,530	32,335 t	226,345
Silver	4,000 oz	2,684	2,616 oz	1,543
Slate	300 sq	1,350	300 sq.	1,350
		$1,103,407	....	$1,725,331

M : thousands ; t : tons, 2,240 lbs. ; b : blocks ; bl : barrels : sq : squares ; oz : ounces, fine.

mother country, then must Newfoundland's opportunity come. Most certainly, no colony under the British flag holds a superior position in this respect.

late

ABLE III.

e past ·re years, based upon the metallic contents and average ruling
educed ores. The value of the non-metallic minerals is their selling
rkets, less the cost of production.

	1899		1900		1901		
alue.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Total Value
7,570	772,000 M	$ 8,464	800,000 M	$ 11,200	1,305,000 M	$ 13,050	$ 47,854
900	500 t	500	500 t	500	5,000	5,000	7,400
5,457	706 t	10,399	...	...	...	...	68,318
11,600	5,000 t	20,000	...	...	...	...	31,600
500 ?	...	500 ?	...	500 ?	...	500 ?	2,500 ?
6,741	2,955 ¼	1,165,757	2,882¼	1,045,387	2,755¼	1,018,207	4,576,476
7,525	2,600 oz	53,742	2,400 oz	49,608	*2,180½	43,609	266,494
0,000	100 t	500	...	2,500	3,240 t	19,710	43,718
2,200	165,633 t	2,650,128	177,584¼	2,841,348	410,127 t	6,562,032	13,133,117
...	...	...	...	...	7,800 bls.	975	975
...	...	...	...	...	...	...	18,000
...	23 t	660	...	...	...	...	660
3,600	3,512 t	28,100	...	...	140,000 b	14,000	55,700
6,345	26,154 t	183,078	...	...	7,353 t	37,128	676,081
1,543	no returns.		no returns		no returns		4,227
1,350	...	...	600 t	10,800	6,000 sq.	22,500	36,000
25,331	...	$4,121,828	...	$3,961,843	...	$7,736,711	$18,949,120

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*Estimated on average yield of former years, per ton of ore, viz.: 1.5 dwts.

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OUR IRON ORE INDUSTRY.

The enormous growth in the iron and steel industry of late years, both in Europe and America, has given an impetus to iron mining the world over, in which Newfoundland has participated to such an extent that iron ore now ranks foremost among her mineral productions.

Heretofore copper ore claimed this place, and though it has not diminished in quantity, but, on the contrary, is on the increase, yet it has been completely outstripped by the production of iron ore at the Bell Island Mines. The figures of the foregoing tables reveal the fact that, not only has the output of the latter for the year just passed more than doubled in value that of the copper, but that it only falls short of the total value of all the mineral products in 1900 by $51,893. It is probable the coming year will witness a still further increase, and that nothing short of 1,000,000 tons will be the outcome.

In view of the enormous demand for iron products and the almost absolute certainty of its continuance, any country so favorably situated as Newfoundland, possessing an abundant supply of cheap iron ores, cannot fail to reap the benefit therefrom in the near future. The fact that pig iron and steel produced from Bell Island ore can be placed upon the market at $5 or $6 a ton less than any other, as has been demonstrated, must inevitably draw attention to this country's superior advantages in this respect.

Britain's home production is on the decline; her foreign sources of ore supply are diminishing. American manufacturers ever ready to take advantage of such conditions, are rapidly forcing their iron products upon her markets. Their phenomenal ore deposits, use of labor-saving machinery, both in mining and converting the ores into marketable condition enables them to do this, and compete successfully with the foremost manufacturing nations in the world.

If Britain hopes to hold her own, or retain her position as a great iron producer, it is pretty evident that it is only by turning attention to her colonies and utilizing their rich ore deposits she can hope to do so. When this fact becomes fully realized by the mother country, then must Newfoundland's opportunity come. Most certainly, no colony under the British flag holds a superior position in this respect.

It is not to be supposed for a moment that the Bell Island deposits constitute the only iron resources of the country; though it is not probable that others of an exactly similar character do exist. It is at least known that magnetite and clay ironstone are found in available quantities on the western side of the island, and the abundant indications of the mineral in several other localities will assuredly lead to important discoveries when systematic prospecting for this class of ore takes place.

Any country posessing iron and coal has within itself two of the most potential factors upon which to base an industrial prosperity. Mr. Moxham of the Dominion Iron and Steel Company has shown, that by a combination of most favorable circumstances his company is enabled to assemble at Sydney, Cape Breton, the three principal elements required in the production of pig iron, at the lowest possible cost for raw materials. Owing to the situation of their plant at tide-water, and their exemption from expensive railway carriage, they are thus placed in a position to produce the cheapest iron in the world. Bell Island is, however, their chief source of supply of ore.

Since, then, Newfoundland possesses the iron, coal and limestone all within her own borders, it does seem very apparent that she presents a still more favorable field than even Cape Breton for the establishment of such an industry.

Nature has certainly done its part in providing all the necessary ingredients, with magnificent harbors, open water-ways and proximity to the principal European markets. These considerations should place her first before all the colonies as a field for the development of a great iron trade. The establishment of such an industry here would place the country upon a pinnacle of advancement and prosperity, not hitherto dreamed of.

OUR COPPER ORE INDUSTRY.

Although the copper markets have been in a disorganized condition of late, and prices have fallen considerably, this is believed to be only temporary.

The chief causes of these fluctuations are not due so much to a depreciation in the value of the metal as to the action of certain stock-jobbers; especially, a syndicate known as the Amalgamated Copper Company. This syndicate made a bold attempt to corner the market by buying up all the metal they could lay hands upon; and holding it so as to enable them to dictate prices. Not content with this, they made a bid for the chief sources of supply of the raw ore; but when they approached such concerns as the Calumet and Hecla and Rio Tinto companies, they met with a rebuff which caused a collapse. A slump in the price of copper was the immediate result. They were obliged to dispose of their accumulated stocks at reduced prices, and the inflated condition of the market ceased for the time being.

It is also understood that the demand for copper in such industries as it is chiefly made use of, especially in Europe, was not so brisk as it was the preceding year. [illegible] probable truth is, that the sudden collapse of the great copper [illegible] threw upon the market an enormous amount of accumul[illegible] metal held by them.

Whatever may be the true cause, [illegible] has certainly taken a downward tendency for the present; but [illegible] believe when it has reached its normal value of a few years [illegible] it is likely the present deranged condition of the market [illegible] re-right itself.

The immense demand for the metal in electrical appliances, will most certainly continue to increase in proportion [illegible] with the utlization of this great modern motive power; [illegible] all likely that prices will ever again touch so low a figure as they did some fifteen or twenty years ago.

The marked improvements in copper metallurgy of late, have rendered the economic treatment of low grade [illegible] possible; so that deposits which could not be handled [illegible] ago, are now attracting capital to their development.

In the matter of ore concentration, great [illegible] improvements have been achieved, and new methods are constantly being patented. One of the simplest and most effective of these, adapted to the treatment of most metallic ores, but especially to sulphides, is the concentration by means of oil. If all that is claimed for it be true, it seems to point to a great revolution in the treatment of such ores as contain rich metallic substances, but sparcely disseminated in the matrix. Where they contain an appreciable amount of the precious metals, as is not infrequently the case, their utilization becomes all the more profitable.

This patent, which is known as the Elmore process, consists in the treatment of the slimes with oil in a series of revolving cylinders, whereby the fine metallic particles are taken up by the oil, which floats off into a receiver, carrying the metal with it. From 80 to 85 per cent. of the metallic contents of the ore are said to be saved, where hitherto, under the method of concentration by water, a large percentage was lost owing to the lighter particles floating away.

The patent has been installed at the Glasdir mine, North Wales, where it has given every satisfaction. Here an ore containing only 1.12 per cent. of copper, with a small amount of gold and silver per ton, was treated with such marked success that, when 14 tons were concentrated into one ton, it contained 70 per cent. of the copper, 69 per cent. of the gold, and 65 per cent. of the silver. The company believe that by this process their property will be converted from a non-dividend paying concern into a profitable mine.

The process is also being experimented with in Norway and elsewhere on a similar class of ores. Here in Newfoundland we have several such deposits, chiefly amongst the rocks of the older Huronian series, which were hitherto considered unworkable. Should the claims of its originators for this new system of treatment prove well founded, it may open up for those rich but sparsely-disseminated ores a profitable future.

Notre Dame district still continues to be the chief copper producer, the only mine outside of its confines as yet developed to any extent being the Blo-mi-don mine at York Harbor, Bay of Islands. Recent reports from this locality tend to confirm the good opinion always held of the property, and seem to give promise of results little if anything inferior to the best of those in Notre Dame Bay.

A few years hence may witness a second copper mining centre established on our West Coast, whose proximity to the coal areas would no doubt prove a great incentive to the smelting of the ores on the spot.

General Remarks on the Mining Industry.

The time appears to me to have arrived when local capital might be invested to advantage in the exploitation and manufacture of some, at least, of our mineral products. If there is money to be made out of them, as has been amply demonstrated by those outside who have made a success of mining enterprise in the country, there appears no good reason why local capital, under careful and judicious management, should not participate in them with profit.

There are many valuable deposits of various mineral substances locked up and lying unproductive because outside capital is difficult to entice and the advantages possessed by this country are not sufficiently recognized. Its insular position, magnificent harbors, nearness to both European and American markets, abundance of the raw materials, splendid water powers, cheapness of labor, &c., place it in a foremost position in these respects. Why, therefore, cannot some of our local capital be employed in operating these resources? We have seen what can be done by enterprising Canadians and Americans in our midst, and this should prove an object-lesson worthy of imitation.

It seems useless to expect outsiders to pay exorbitant prices for undeveloped mining properties, and every year is demonstrating this fact more clearly.

If the holders of mineral claims of any promise expect to dispose of them they will require to do at least a certain amount of development work, sufficient to establish the character of their properties as paying investments. This can scarcely be accomplished by single individuals, nor would it be advisable for any such to attempt it.

Why then not form companies,—put a sufficient number of shares upon the local market to ensure the raising of capital to perform the work required to place their properties on a saleable basis, if indeed they do not feel disposed to continue operating themselves? It will have to be done sooner or later if we hope to see our rich mineral deposits worked. Then again, it would afford an opportunity to the smaller capitalists of investing in local industries not more risky than many of those they are at present willing to embark in.

I am a strong advocate for this means of exploiting our mineral wealth. If we do not show faith ourselves in this way, how can we expect others to do so.

In this connection I might suggest that, could our Government see its way clear to encourage legitimate mining enterprise by the offering of a bounty upon the production and manufacture of certain classes of metallic products in our island, such as pig iron, steel, spiegeleisen, ingot copper, lead, spelter, gold, etc., I believe a great impetus to mining would be brought about, which in the course of a short time would recoup the treasury for any such outlay.

There are many properties now lying unproductive, which under such a system could be rendered paying investments. Amongst the more valuable mineral substances known to exist on the island and on the Labrador, which might easily be wrought by local capitalists, may be mentioned asbestos and mica, two products requiring no process of manufacture beyond a little sorting and concentration to render them marketable commodities. Both are of high value and both are in demand. Few minerals of ordinary character realised higher prices. The best, or 1st grade Canadian asbestos sold last year, 1900, for $200 a ton in the American markets, while No. 2 fetched from $80 to $100 per ton. The refuse fibre left after milling is all utilized for plastering purposes under the name of asbetic, and this material is gaining rapidly in favour. Its manufacture now forms a special industry in itself, and there appears to be a great future before it. Much of the short fibre in this country would be admirably adapted for this particular purpose.

The value of the asbestos output of the province of Quebec in 1901 reached $735,364, or nearly equal to that of our Bell Island iron ore last year. About 1,000 persons were employed in the industry whose wages amounted to $266,000, or $266 per head.

Valuable as asbestos appears to be, mica far exceeds it, ranging all the way from 7 cents up to $1 per lb., or at the rate of $2,000 per short ton. Of course this latter price is only realised for the very largest and clearest material. Scrap mica is now used extensively in making lagging for packing steam boilers, pipes, &c. One firm in Toronto manufactures large quantities into suitable sheets or mat, as it is termed. Its non-conductive qualities, durability, facility with which it can be applied, and absence of injurious substances are strongly in its favour. Canada and India are the two greatest producers of mica in the world to-day, though more or less quantities are obtained in several other countries.

The use of mica as an insulating material in electrical apparatus, for which it is especially valuable, would alone ensure a considerable demand for it. England's importation for 1899 exceeded one million dollars' worth. It came chiefly from India.

From what we know of our Labrador territory, there would appear to be in that region room for a vast mica industry in the near future. It is certain that the country possesses an abundance of the material of large size and superior quality, nor is the island of Newfoundland itself destitute of some good mica.

Chromite is another substance which might well engage the attention of our mining people. Some large depoits of this valuable mineral have recently been discovered, and the probabilities are that, as the serpentine areas of the island become more thoroughly explored, many other finds will come to light. The deposit mentioned last year as occurring near the head of the Bay D'Est River has been further examined and found to be even more extensive than at first supposed.

In view of the almost prohibitory price of coal in our markets, and the certainty of the existence of this most necessary article of fuel in available quantities within our borders, it is strange nothing has as yet been done towards utilizing it. Here we certainly have a merchantable commodity, with a home market capable of absorbing all that could be raised for years to come, and yet we must look to outsiders to put it in our possession. A local company could most certainly operate a coal mine, and it would not require a very large capital to do so. I look upon such an undertaking, especially in the Bay St. George coal area, as affording equally as good a risk as any other of the country's resources.

Gold mining will eventually be numbered amongst the industrial pursuits of the country. It is one that, under careful handling and skilful scientific treatment, can become a remunerative investment, even where the precious metal is only present in comparatively small quantity.

There can no longer be any room for doubt that the country is auriferous. True, the gold is either hidden in the baser metals or otherwise distributed rather sparsely through quartz leads, as in the case of the Rose Blanche deposits; but as every year witnesses improved methods of recovering the metal from its ores, a very small percentage, under favorable general conditions, can now be economically extracted. As yet no systematic search has been made for gold, and some of the most likely localities have never been looked to at all.

At Deloro, Ontario, Canada, a company called the Canadian

Gold Fields, Limited, are operating an auriferous mispickel deposit, which they are successfully treating for its gold and arsenic contents. Hitherto all attempts to extract the gold from this highly refractory ore, economically, proved ineffectual. Expensive plant that had been established from time to time resulted only in successive failures. Now, however, the new company who have the business in hand are not only extracting the gold contents successfully, but also the chief by-products, especially the arsenic, which finds a ready market in Canada and the United States. It is said to be of purer quality than any imported, and its production has become an established success. This is the only arsenic plant in North America. The ore is treated by a new process called the bromo-cyanide.

We have in Newfoundland many known deposits of almost an exactly similar mispickel to that at Deloro, and, like it also containing sufficient gold and silver to be well worth recovering. There would appear to be an opening here for just such another industry, could the capital be found to exploit it.

Pyrrhotite, or magnetic pyrites, is a common ore in this country. It usually contains more or less nickel, and is similar to the ores upon which the great nickel industry of Sudbury, Canada, is founded. The percentage of nickel is generally very small, rarely exceeding 5 per cent., while the average is not more than 3 per cent. Our pyrrhotites may yet prove the basis of a valuable nickel industry when capital and enterprise are brought to bear upon their utilization.

Galena or sulphuret of lead is another mineral which should be receiving some attention. There are several well-known deposits of this valuable material, and years ago it was worked to a considerable extent in the district of Placentia and in Port-a-Port Bay. None of these deposits were exhausted, and it is a great pity that such valuable properties should be now lying unproductive. In the case of the Silver Cliff mine at Little Placentia, the ore was found to be highly argentiferous, which should prove an incentive to capitalists to re-open this promising property.

Manganese, or rather manganiferous iron ore, is an abundant mineral, and is now largely used in the production of spiegeleisen, a substance of growing economic importance. The deposits of this class of ore along the south side of Conception Bay have been proved to be very extensive. They have been visited and examined by several mining experts, all of whom are unanimous in the opinion that the deposits are, so far as quantity is concerned, practically inexhaustible. As yet, however, the hopes of those holding mineral claims in that locality have not been realised. It is understood that the Dominion Iron and Steel Company are at present experimenting with this ore, with a view to its utilization at their smelting works in Sydney, C. B. Should it come up to their requirements, a considerable boom may be looked for.

By a decree of the United States treasury, it was decided that a mineral to be classed as a manganese ore must contain 50 per cent. or upward of manganese oxide, and not over 10 per cent. of iron. This decision was afterward modified, so that ores containing less than 50 per cent. manganese, when the iron contents did not exceed 3 per cent. were so classed. Ores containing 44 per cent. manganese, with 3 per cent. or less of iron, are now generally recognised as coming within the standard; all those with a lower percentage of the one and a higher percentage of the other are classed as manganiferous iron ores.

With its iron and manganese deposits fully developed, Conception Bay will take first place as the greatest mining district in the island, a position heretofore held by the great Bay of Notre Dame. In all probability, however, both will eventually be far outstripped by the district of Bay St. George, whose more varied natural resources must in time force it to the front rank. Possessing, as it does, the only coal deposits of value in the island, it holds the key, as it were, to the greatest mining possibilities of the entire country, which, sooner or later, must make themselves felt.

Gypsum has frequently been referred to as an abundant mineral substance among the lower arboniferous series in the last-named district. Little has been done in the way of exploiting this useful material as yet. Immense quantities are annually exported from the lower provinces of the Dominion of Canada to the United States, to be used as plaster and for paper-filling. We are in just as favorable a position for shipping this material as they are, and as we possess unlimited supplies of a first-class quality, it only requires a little enterprise to enable us to share in this trade. Canada's production in 1899 reached the value of $257,329. It is nearly all sent to market in its crude state, just as it comes from the quarry, only requiring a little sorting before being shipped.

The manufacture of cement, which is a gigantic industry in the United States and Canada, might well engage the attention of some of our people. There is an abundance of raw materials suitable for the purpose in many parts of the country, and there is a considerable local demand for cement, amounting annually to many thousands of dollars.

A considerable portion of the cement of commerce is made of natural rock, usually an argillaceous limestone, but by far the greater portion, and that of the better quality, is produced artificially by a combination of lime, marl, and sand, etc., which, when ground together and calcined in suitable kilns, forms what is called Portland cement—Portland, England, being the original seat of its manufacture.

The initiation of a cement industry here might not for a time prove very remunerative, owing to the limited demand, but there is room for great expansion, and a cheapening of the article in the market would so bring it into more general use.

The manufacture of peat-fuel is now placed beyond the experimental stage. In a country like this, possessing so much peat of excellent quality, with coal at almost prohibitive prices, and firewood becoming more and more difficult to procure each year, there should certainly be an opening for such an industry. The advantage, especially to the poor, to be able to procure a cheap fuel at least equal to the inferior varieties of the imported coal, would indeed be a great desideratum. There can scarcely be a doubt that the demand for such an article would be in excess of what could be manufactured for some years to come.

One of the results of publishing an annual statement of the mineral development of the island is a constantly-increasing demand for information from outside sources concerning the minerals of the country generally. So great has this demand become of late that it takes a large portion of my time to reply to the numerous letters of enquiry received.

It is scarcely necessary nowadays to state what the value of correct statistics of any industrial pursuit means. They are the index, as it were, of the state or condition of the particular industry to which they refer. They point out its various fluctuations, and are, in fact, a measure of its value. When such figures show a falling off or a tendency to depression, it would seem to point to the necessity of some steps being taken to arrest this downward tendency. Where, again, they show a fair prospect of a development into a permanent and far-reaching benefit to the country at large, it would indicate the wisdom of applying thereto a fostering and progressive policy. This latter is the stage at which our mineral industry has now arrived, and there can be little question that under such a policy it is destined some day to become one of the foremost pursuits of our people; if not, indeed, the very mainstay of the country itself.

I have the honour to be, Sir,

Your obedient servant,

JAMES P. HOWLEY.